# UNITED STATES PATENT AND TRADEMARK OFFICE

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|---|---|---|---|
| 09/919,283 | 07/31/2001 | Duane E. Galbi | 00CXT0725N-1 | 2490 |

| 36122          7590          08/03/2005 | EXAMINER |
|---|---|
| SETTER OLLILA, LLC<br>2060 BROADWAY<br>SUITE 300<br>BOULDER, CO  80302 | SCHEIBEL, ROBERT C |

| ART UNIT | PAPER NUMBER |
|---|---|
| 2666 | |

DATE MAILED: 08/03/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

| | Application No. | Applicant(s) |
|---|---|---|
| **Office Action Summary** | 09/919,283 | GALBI ET AL. |
| | Examiner | Art Unit | |
| | Robert C. Scheibel | 2666 | |

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on _24 May 2005_.

2a)☒ This action is **FINAL**.          2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) _1,3,5,6,10,11,13,15,16 and 20_ is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) _1,3,5,6,10,11,13,15,16 and 20_ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All    b)☐ Some *   c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage
application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
    Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____ .

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: _____.

## DETAILED ACTION

- The amendment filed 5/24/2005 is acknowledged.

- The changes to the specification are acknowledged, however, additional changes are required as detailed in the objections below.

- The previous rejection of claims 1-21 under 35 U.S.C. 102(e) has been withdrawn in view of the amendments to the claims. However, a new grounds of rejection has been made under 35 U.S.C. 103(a).

- Claims 1, 3, 5-6, 10-11, 13, 15-16, and 20 remain pending.

### *Response to Arguments*

1.      Applicant's arguments, see page 9, filed 5/24/2005, with respect to the objections to the specification have been fully considered but they are not persuasive. The status of one of the applications (09/639,915) has changed and some other typographical errors must be corrected.

2.      Applicant's arguments, see pages 9-10, filed 5/24/2005, with respect to the rejections of claims 1-21 under 35 U.S.C. 102(e) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, new grounds of rejection are made in view of U.S. Patent 6,724,767 to Chong in view of U.S. Patent 6,021,132 to Muller et al. Examiner notes that the passage cited as supporting the new limitation of claim 1 (page 20 line 24 through page 21 line 20) is not believed to provide the required support; however, the passage from page 23 line 20 through page 24 line 24 does provide this support.

### *Specification*

3.      The disclosure is objected to because of the following informalities: the status of several applications listed in the specification needs to be updated or corrected as indicated below.

- 09/639,915 (referenced on both page 2 and page 6): current status is "now patent number 6,888,830".

- 09/640,258 lists the wrong patent number on both pages 2 and 3. The correct patent number for this application is 6,754,223.

- 09/639,966 lists the wrong patent number on both pages 3 and 6. The correct patent number for this application is 6,760,337.

  Appropriate correction is required.

### *Claim Objections*

4.     Claim 1 is objected to because of the following informalities: "each of said state information buffers having an in-use counter" on lines 14-15 should be changed to "each of said state information buffers *has* an in-use counter". Appropriate correction is required.

### *Claim Rejections - 35 USC § 103*

5.     The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6.     This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later

invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c)

and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7.      Claims **1, 3, 5-6, 10-11, 13, 15-16, and 20** are rejected under 35 U.S.C. 103(a) as being

unpatentable over U.S. Patent 6,724,767 to Chong et al in view of U.S. Patent Number 6,021,132

to Muller et al.

Regarding claim **1**, Chong discloses a core processor (the RISC microcontroller 240 of

Figure 3) configured to execute software to process a series of communication packets (see line

64 of column 6 through line 1 of column 7), the processing of each packet being an event and

having associated data and context information; and a co-processor (processing engine 10 in

Figures 1-3) comprising a plurality of state information buffers (queue descriptor 500 of Figure

6, for example) for storing state information, a plurality of context buffers (buffer descriptors –

element 570 for example) for storing context information associated with a plurality of events

and a plurality of data buffers (packet descriptors – element 560 for example) for storing data

associated with the plurality of events where the state information comprises a data buffer

pointer (NP 320 of Chong) pointing to one of the plurality of data buffers and a context buffer

pointer (NB 330 of Chong) pointing to one of the plurality of context buffers.

Regarding claims **10, 11, and 16**, Chong discloses the analogous limitations of those

claims as discussed regarding claim 1 above.

Chong does not disclose expressly the limitation of using an in-use counter in the state

buffers (claim 1, 10, 11, and 16) or in the context and data buffers (claims 10 and 16).  Chong

also does not disclose the limitation of claims 10 and 16 of transferring data between events by

changing the data in the state information buffer.

However, Muller discloses the concept of buffer ownership throughout, indicating that this is necessary in the shared memory management scheme discussed therein. For example, lines 37-40 of column 6 and lines 34-36 of column 11 discuss the need for tracking the number of owners of a given buffer in order to know when the buffer can properly be released in a shared memory scheme. Muller also discusses the transfer of buffer ownership by updating the count field from line 16 of column 11 through line 37 of column 12. In a combination of Muller with Chong, it is clear that (as indicated in Muller in lines 37-40 of column 6 and lines 34-36 of column 11) buffer ownership would be tracked using ownership counts which are analogous to the in-use counts of the present invention. Further, it would be necessary at times to transfer ownership of these shared buffers (as described in Muller in columns 11 and 12) by changing a state variable (the ownership count). Muller further discloses the limitations of claim 11 of incrementing the in-use counter associated with said state information buffer when an event is associated with said state information buffer (lines 34-36 of column 11 and line 61 of column 11 through line 2 of column 12); and decrementing the in-use counter of said state information buffer when said event associated with said buffer is finished (lines 22-29 of column 7 and lines 49-53 of column 12). Chong and Muller are analogous art because they are from the same field of endeavor of high-speed packet switching.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the shared memory management scheme of Muller with Chong. Specifically, it would have been obvious to use a shared memory scheme like that of Muller to share common memory resources dynamically among all input/output ports and thus to more efficiently manage the memory resources (see lines 1-18 of column 2 of Muller).

The motivation for doing so would have been to provide more efficient use of memory resources in a switching system as discussed in lines 1-10 of column 2. Therefore, it would have been obvious to combine Muller with Chong for the benefit of better use of memory resources to obtain the invention as specified in claims 1, 10, 11, and 16.

Regarding claims **3 and 5**, as indicated above regarding claims 10 and 16, Muller discloses the limitation of an in-use counter for buffers in a shared memory scheme throughout and specifically in lines 37-40 of column 6 and lines 34-36 of column 11. Thus, as indicated above, Chong, modified by Muller as above, discloses the limitations of claims 3 and 5 of an in-use counter associated with the context buffers and the data buffers.

Similarly, regarding claim **6**, as indicated above regarding claims 10 and 16, Muller discloses the limitation of transferring data between events by changing in a data buffer in the discussion of buffer ownership transfer processing in columns 11 and 12. Thus, as indicated above, Chong, modified by Muller as above, discloses the limitations of claim 6 of transferring data from one event to another.

Regarding claims **13, 15, and 20**, Chong doesn't disclose expressly the limitation of incrementing and decrementing an in-use counter when events are associated with the context or data buffers. Muller discloses incrementing the in-use counter associated with said context (data) buffer when an event is associated with said context (data) buffer (lines 34-36 of column 11 and line 61 of column 11 through line 2 of column 12); and decrementing the in-use counter of said context (data) buffer when said event associated with said context (data) buffer is finished (lines 22-29 of column 7 and lines 49-53 of column 12).

Chong and Muller are analogous art because they are from the same field of endeavor of high-speed packet switching.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the shared memory management scheme of Muller with Chong. Specifically, it would have been obvious to use a shared memory scheme like that of Muller to share common memory resources dynamically among all input/output ports and thus to more efficiently manage the memory resources (see lines 1-18 of column 2 of Muller).

The motivation for doing so would have been to provide more efficient use of memory resources in a switching system as discussed in lines 1-10 of column 2. Therefore, it would have been obvious to combine Muller with Chong for the benefit of better use of memory resources to obtain the invention as specified in claims 13, 15 and 20.

### *Conclusion*

8.      The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- US 6,782,465 to Schmidt discloses a linked list DMA descriptor architecture.
- US 6,246,682 to Roy et al discloses a method and apparatus for managing multiple ATM cell queues.

9.      Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE

MONTHS from the mailing date of this action. In the event a first reply is filed within TWO

MONTHS of the mailing date of this final action and the advisory action is not mailed until after

the end of the THREE-MONTH shortened statutory period, then the shortened statutory period

will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

however, will the statutory period for reply expire later than SIX MONTHS from the date of this

final action.

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Robert C. Scheibel whose telephone number is 571-272-3169.

The examiner can normally be reached on Monday and Thursday from 6:30-5:00 Eastern Time.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Seema S. Rao can be reached on 571-272-3174. The fax phone number for the

organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent

Application Information Retrieval (PAIR) system. Status information for published applications

may be obtained from either Private PAIR or Public PAIR. Status information for unpublished

applications is available through Private PAIR only. For more information about the PAIR

system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR

system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

_RCS  8-1-05_

Robert C. Scheibel
Examiner
Art Unit 2666

DANG TON
PRIMARY EXAMINER